interseroh ALBA

ALBA Group

resources SAVED by recycling.

Recycling adds value. The latest Fraunhofer UMSICHT study reveals the positive environmental and climate impacts: With the closed-loop management of 4.8 million tonnes of materials in 2020, the ALBA Group conserved 28.8 million tonnes of primary resources and avoided 3.5 million tonnes of greenhouse gas emissions.*

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* Source: Fraunhofer UMSICHT

ALBA Group
The ALBA Group, one of the leading recycling and environmental services companies as well as raw material providers worldwide, operates with its two brands – ALBA and Interseroh – within Germany, Europe and Asia. In 2020, its divisions generated an annual turnover of 1.9 billion euros and employed a staff of approximately 8,700 employees.

Fraunhofer UMSICHT
Fraunhofer UMSICHT is a pioneer for a sustainable world. With its research in the areas of climate-neutral energy systems, resource-efficient processes and circular products, the institute makes concrete contributions to achieving the 17 Sustainable Development Goals (SDGs) of the United Nations.

Fraunhofer UMSICHT develops innovative, industrially feasible technologies, products and services for the circular economy and brings them to application. The focus is on the balance of economically successful, socially equitable and sustainable developments.

The institute has sites in Oberhausen, Willich and Sulzbach-Rosenberg. In 2020, Fraunhofer UMSICHT generated a turnover of more than 53.9 million euros with a workforce of 577 employees. As one of 74 institutes and research units of the Fraunhofer-Gesellschaft, the leading organisation for applied research in Europe, it is part of a worldwide network and promotes international cooperation.

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Dear reader,

In a landmark decision on 24 March 2021, Germany's Federal Constitutional Court ruled that the country's Climate Change Act had to be amended in order to safeguard the civil liberties of future generations. The German government moved quickly to present an amendment bill, which was duly enacted. The new targets for Germany are a 65 percent reduction in greenhouse gas emissions by 2030 and climate neutrality by 2045.

Time is short. What is needed is a major transformation, away from a climate-damaging linear economy and towards circular processes in trade and industry. A consistent circular economy has a huge positive climate impact and secures a supply of urgently needed raw materials. There are increasingly loud calls in policymaking and business for a concerted and sustained push to promote recycling. The European Parliament sent out an important signal during the German Council Presidency when it voted in favour of stimulating demand for recycling outputs and introducing mandatory quotas for recycled content. More and more companies, too, are working to ensure that their products and packaging are recyclable and have embraced circularity in their sustainability strategies.

The trend is in the right direction. Now it is a matter of harnessing the dynamic market forces of the circular economy and fully exploiting the potential for the climate and for resource conservation. This will only succeed if all players in the value network pull together. Reaching the next level – a new recycling culture – needs a suitable regulatory framework, defined industry standards for recycled raw materials, suitable financial incentive systems and, most of all, the will to collaborate on an ongoing basis. It is in our own hands. Trade and industry can commit to using recyclates and recyclable packaging, consumers to separating household waste and environmental service providers to innovating and further developing environmentally and economically efficient recycling methods.

The ALBA Group is fully committed here. Read on to find out how, despite all the restrictions due to the pandemic, we contributed to combating climate change and conserving resources in 2020.

We wish you an enjoyable read.

Dr Axel Schweitzer

Dr Eric Schweitzer

Chief Executive Officers, ALBA Group plc & Co. KG

Closing the loop **for the climate**

The circular economy is integral to both the European Green Deal and the German Sustainable Development Strategy. And it is one of the most powerful driving forces on the road to climate neutrality. The study, “resources SAVED by recycling”, quantifies the benefits. Each year, it shows down to the last kilogramme how the ALBA Group contributes to combating climate change and conserving resources by consistently recycling raw materials.

In the study, the Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT, on the basis of clearly defined scientific standards, examines the volume of greenhouse gases and of biotic and abiotic resources that are saved relative to primary production. Abiotic resources are non-renewable resources such as ores, coal and sand. Biotic resources, on the other hand, include materials such as timber. The methodology comprises a detailed comparison of primary and recycling processes for the various material streams. After determining resource and energy consumption at each process step, the researchers feed the data into the GaBi life cycle assessment tool. This software application from life cycle specialists Sphera computes the exact savings delivered by each recycling process relative to the corresponding primary process. A positive impact in the recycling of plastics, for example, results from the avoidance of energy-intensive crude oil extraction and refining. Material streams included in the analysis in 2020 were plastics, metals, timber, paper/cardboard and glass.

The circular transformation calls for new ways of thinking. Products must be designed and made so that they contain recycled raw materials and are themselves capable of being usefully recycled.

The ALBA Group’s contribution in 2020

The latest study by Fraunhofer UMSICHT shows that with the closed-loop management of 4.8 million tonnes of materials in 2020, the ALBA Group avoided

3.5 million tonnes of greenhouse gas emissions

This is the same level of climate protection offered by 349,823 hectares of mixed forest with almost 49 million trees.

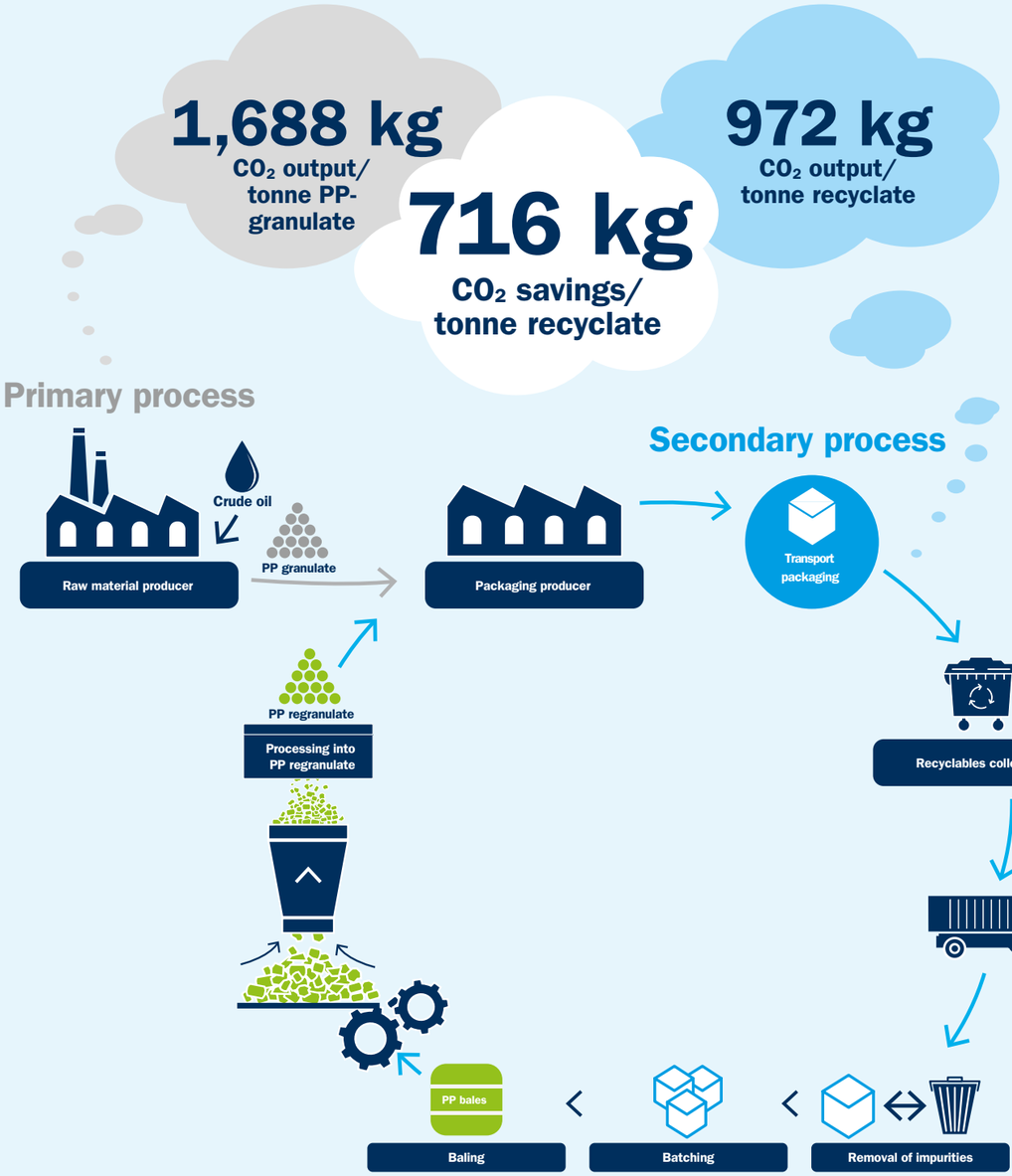
At the same time, the ALBA Group conserved

28.8 million tonnes of primary resources

which did not have to be taken from the environment, transported and processed.

The aggregate figures include all ALBA Group recycling activities in Germany, Austria, Poland and Slovenia.

Polypropylene (PP) recycling process



Life cycle assessment begins with a 1:1 visualisation of the recycling process, in this example the polypropylene (PP) material stream. Every step is captured, from recyclables collection, sorting and baling to shredding and remelting in the extruder to produce PP regranulate.

3.5 million tonnes
of greenhouse gases saved

resources SAVED

Materials in the recycling loop:
The climate protection and resource conservation effects in detail

The table below shows, for each material stream, the volumes of greenhouse gases and primary resources saved by the ALBA Group in 2020.

	Quantity recycled	Tonnes saved
PAPER/CARD-BOARD/TIMBER	2,160,245 tonnes	855,470 tonnes of greenhouse gases 7,903,588 tonnes of primary resources
METALS	1,039,308 tonnes	1,994,515 tonnes of greenhouse gases 14,002,962 tonnes of primary resources
PLASTICS	831,331 tonnes	395,609 tonnes of greenhouse gases 3,106,883 tonnes of primary resources
GLASS	674,084 tonnes	179,884 tonnes of greenhouse gases 1,368,705 tonnes of primary resources
WEEE	91,193 tonnes	72,748 tonnes of greenhouse gases 2,394,086 tonnes of primary resources

28.8 million tonnes
of primary resources saved

Next level: **Working together for a new recycling culture**

Rather than sitting back and waiting for a better future, we are taking responsibility for the closing of raw material loops. Ranging from the use of innovative recycled plastics in new industries to smart ideas for waste management logistics and sophisticated mobile sorting units, the examples that follow show how the ALBA Group is already working side by side with customers today to build the circular economy of tomorrow – and the commercial and environmental benefits that this brings.

Recycled plastic: attractive for the beauty industry

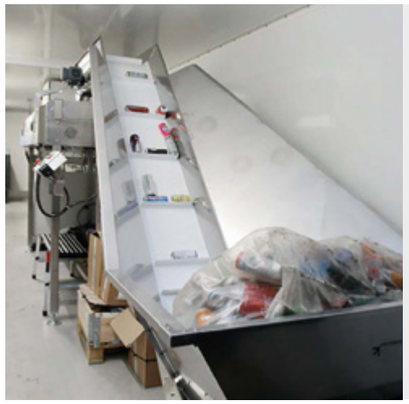
The project
First-ever use of post-consumer recyclates for decorative cosmetics packaging

The parties
cosnova GmbH, INTERSEROH Dienstleistungs GmbH

The benefits
- New applications for recycled raw materials made out of waste packaging from kerbside collection
- Secures supply of raw materials and reduces production of virgin plastics
- Sustainable sales arguments for environmentally conscious cosmetics producer

A trendsetter in sustainable packaging design, cosnova became the first decorative cosmetics company to launch packaging made of Procyclen on the market in spring 2021. Produced by Interseroh to strict quality standards using plastic waste from the Dual System collection schemes, the recycled plastic is now found in caps of CATRICE nail polish bottles and 'essence'-brand lip glosses and concealers. The recycled material made out of waste packaging from kerbside collection does not come into direct contact with the product contents. cosnova's packaging provides an example of what is possible in plastics recycling today, and that recyclates from post-consumer waste now meet the highest standards. A key contribution to quality assurance is made by Interseroh's Centre of Competence for Plastics Recycling in Maribor, Slovenia. After obtaining official international accreditation in March 2020, this centre of competence is the only recognised research facility in the EU specialising in the development and analysis of recycled plastics. The material for the cosnova bottle caps was also developed there with the award-winning Recycled-Resource process. Containing over 94 percent post-consumer material made out of waste packaging from kerbside collection, the formulation was precisely matched to the company's requirements by incorporating very finely blended special additives. Procyclen scores well across all parameters, from colour and mechanical resilience to stability in processing and material purity. And there is a further compelling argument in favour of this premiere appearance in decorative cosmetics: According to a further scientific study by the Fraunhofer Institute UMSICHT, the use of the Procyclen recycled plastic reduces climate-damaging greenhouse gases by 56 percent relative to virgin material.

"We attach great importance to reducing the production of virgin plastic by using more recyclates in our product packaging."
– Axel Geiger, Executive Expert Purchase & Packaging, cosnova



Efficient deposit return logistics

The project
Mobile counting centre for collecting and sorting returned single-use deposit cans and bottles

The parties
EDEKA Pfand GmbH, INTERSEROH Pfand-System GmbH

The benefits
- Greater flexibility and reduced logistics effort for retailers
- Legally compliant deposit clearing
- High-quality recycling of PET bottles

Where to send empty PET bottles and drink cans? The logistics surrounding returned single-use deposit cans and bottles presents retailers with a challenge. INTERSEROH Pfand-System GmbH has developed a flexible, technically sophisticated solution that meets a market need for retailers that do not have reverse vending machines of their own. The company's mobile counting centres bring the take-back infrastructure out to retailers. Built into a truck semitrailer, they can be deployed wherever they are needed, such as near a large central retail warehouse. The third of these travelling counter centre service trucks hit the roads this year. Each of them is kitted out with a compact high-tech unit that counts empty deposit cans and bottles, crushes them or defaces the deposit marking and sorts them into material fractions at a rate of over 100 a minute. In this way, a multicoloured mix of PET, aluminium, tinplate and also some glass containers is transformed into single-fraction raw materials for industry. The solution meets all requirements laid down by DPG (the German deposit management organisation), ensures that deposits are redeemed correctly and keeps valuable materials such as PET safely and efficiently in the recycling loop.

"The mobile solution means we can save on logistics costs while reducing the climate impact."
– Jörg Sagrauske, Managing Director, EDEKA Pfand GmbH

Fast, smart and accurate: Sorting post-consumer packaging with AI

The project
Smart technologies for sorting post-consumer packaging

The parties
TOMRA Sorting GmbH, ALBA Recycling GmbH

The benefits
- Improved efficiency and sorting output quality
- Single-resin recycled plastics for industry
- Knowledge gain for the future of recycling

Technical innovations are key to closing the loop and supplying high-quality recycled raw materials for industry. An example is the use of artificial intelligence and sensor technology to improve the sorting of post-consumer packaging from kerbside collection. At ALBA Group's sorting plant in Leipzig, the high-precision GAIN deep learning system removes silicone sealant cartridges from the waste packaging stream. Because the cartridges are made of the same plastic as, say, shampoo bottles, standard near-infrared (NIR) separators are not usually accurate enough at telling them apart. In cooperation with sorting technology specialists TOMRA, an AI-based module has been added to the existing NIR sorting line. This ensures that the unwanted material is removed without fail. The module combines advanced sensor and camera technology with smart software. Instead of following a pre-programmed routine, its electronic brain 'learns' individually from huge volumes of data and over time gets better and better at dealing with different types of waste. Less manual intervention, improved process efficiency and quality: Based on its positive experience with systems such as GAIN in Leipzig, the ALBA Group will continue to drive forward automation and digitalisation in recycling.

Ready for the future of waste disposal logistics

The project
Digitalisation in scrap logistics

The company
ALBA Metall Süd Franken GmbH

The benefits
- Greater transparency from smart tracking
- Optimised route planning and better truck utilisation
- Significant efficiency gains

The latest study shows down to the last kilogramme what the circular economy means for the climate and resource conservation. In 2020, the ALBA Group sent no less than 1,039,308 tonnes of steel and other metals for recycling. An impressive figure – and a logistical tour de force for the companies involved. ALBA Metall Süd Franken GmbH, for example, has some 2,000 skips and 30 trucks in constant use, carrying away scrap and delivering the sought-after raw materials to the iron and steel industry after professional processing. Today, smart skips and a digital tracking solution make for efficient monitoring and control of all scrap logistics processes. In 2019/2020, the company equipped its fleet with a telematics system that communicates with skips using Bluetooth transmitters. Permanently attached to each skip is a Bluetooth low energy (BLE) tag. This identifies the skip and enables it to be tracked once a truck's on-board system connects with it. Dispatchers have real-time information where skips are and can track all truck movements and send instructions straight to the cab. Applying the Internet of Things (IoT) in this way to scrap logistics has proved a huge success. Among other things it cuts down on empty runs, with the improvement in truck capacity utilisation already delivering a 25 percent efficiency gain in the pilot project.

Green disposal trucks with solar mats

As well as transparency and cost-efficiency, the ALBA Group is also improving the environmental performance of its vehicle fleets and is always on the lookout for innovative ideas to this end. In Berlin, for example, the company recently tested solar mats that can be attached to the roofs of waste disposal trucks. The solar energy can be used for purposes such as operating the air conditioning or the tilt-tip mechanism. This reduces the load on the alternator, cuts fuel consumption and lowers CO_2 emissions. As this example shows, even comparatively small changes can have a lasting positive climate impact.

Intelligent networking: The telematics system in waste disposal trucks communicates with skips.

Packaging made for recycling

The project
Recyclable packaging

The parties
Burger King Deutschland GmbH, INTERSEROH Dienstleistungs GmbH, Made for Recycling

The benefits
- Effective recycling of valuable materials
- Reduced climate and resource impact
- Image gain from "Made for Recycling" seal

High-quality recycling starts with product design. More and more companies take responsibility and design their packaging so that it can be easily reprocessed into new raw materials. The necessary guidance is provided by "Made for Recycling", Interseroh's recognised standard for recyclable packaging. Over the last three years, the "Made for Recycling" specialists have supported brand product and packaging producers through the entire packaging optimisation process, from consulting and analysis to scoring and seal award, and have conducted some 1,600 analyses. An example is Burger King: In spring 2021, the fast-food chain launched a new smoothie product whose packaging was rated as highly recyclable in the scientific testing procedure. This is remarkable because pouches of this type usually consist of multiple materials plus aluminium foil, which makes mechanical recycling very difficult. Burger King's new fruit pouches, by contrast, are made entirely of polypropylene (PP), making them a genuine recyclable form of packaging as shown by the "Made for Recycling" seal.

The "Made for Recycling" seal takes us a further step towards sustainability and lets customers see our environmental commitment.
Klaus Schmäing, Marketing Director, Burger King Deutschland GmbH

Digital prospects for paper as a raw material

The project
Use of NIR scanners in paper/cardboard recycling

The company
ALBA Süd GmbH & Co. KG

The benefits
- Improved yield of high-quality recovered paper
- Deinking material with at least 95 percent purity
- Substitution of increasingly scarce timber resources

Digitalisation is a challenge and an opportunity at the same time. On the one hand, it means that recyclers today have to handle smaller quantities (and lower qualities) of glossy paper but increasing volumes of parcel material because of online shopping. On the other, it is also digital technologies that enable high-accuracy sorting of paper and cardboard. The raw material in greatest demand is sorted deinking material, which is supplied to paper mills for deinking and further recycling. To ensure a stable supply of recovered paper in the required quality, the ALBA Group is investing in a digital upgrade of its paper and cardboard sorting systems. In Waiblingen, southern Germany, for example, it has installed three additional near-infrared (NIR) scanners that use spectral properties of reflected light to identify what materials are on the conveyor. This specific application of NIR technology is particularly effective because two of the units remove impurities such as grey board and films from the paper stream while a third NIR separator rescreens the "rejects". The result is a custom-tailored and innovative approach for efficient, automated raw material recycling.

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